



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
AIR AND RADIATION

MEMORANDUM

FROM: PIOB Oxygenated Gasoline Team
Meredith Miller (202) 233-9031
Steve Albrink (202) 233-9003
Mick Ball (202) 233-9005

SUBJECT: Information about Oxygenated Gasoline Program and MTBE

FAX TO: All Regional Oxy Contacts:

RI	Bob Judge	(617) 565-4939
RII	Mike Moltzen	(212) 264-7462
RIII	Kelly Bunker	(215) 597-1129
RIV	Ben Franco	(404) 347-2130
RV	Jon Paskevicz	(312) 353-8289
RVII	Hal Brown	(214) 665-2164
RVII	Stanley Walker	(913) 276-7065
RVII	Scott Lee	(303) 293-1229
RIX	Roxanne Johnson	
	Sylvia Dugre	(415) 744-1077
RX	Mike Lidgard	(206) 553-0110

Attached to this memo, you will find some eagerly-anticipated information about the oxygenated gasoline program and MTBE. We are sending the following items:

- 1) Two sample controlled correspondence responses which address these issues, and some background press information about MTBE given to us by the Office of Research and Development. The MTBE information contained in the Sweeney letter and the ORD document is, at this time, **FOR YOUR USE ONLY**. If you should have a need to cite any MTBE information when responding to queries, please call Meredith, because ORD has asked to review any correspondence sent from the Agency concerning MTBE.
- 2) The draft memo describing last year's CO exceedance data. We are still waiting for meteorological information from the National Weather Service to complete the analysis, and we will send the final draft as soon as it is available.



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- 3) The tentative schedule of oxygenated gasoline audits for this season. Please review this schedule and mark your calendars for the dates we will be in your Region. We strongly request that you participate in these audits, and ask that you arrange your attendance with management now.
- 4) The Field Operation and Support Division's latest roster.

If you have any questions or comments about any of this information, please give one of us a call.

Within the next two days, we expect that a similar package of RFG information will be sent to each of the Regions.

We have one request of you. We are updating our state oxy contact lists, because they are very out-of-date. Please call one of us with the names, addresses, phone numbers and fax numbers for all of your state program contacts. We would like to have this information by Wednesday, November 23. Thank you very much.

Attachments

Honorable Marge Roukema
Member, United States
House of Representatives
1200 East Ridgewood Avenue
Ridgewood, NJ 07450

Dear Congresswoman Roukema:

This is in response to David Zuidema's October 5, 1994 letter requesting a response to concerns raised by a constituent, Mr. Sam Lichter of Paramus, NJ. Mr. Lichter is concerned about the mandated use of oxygenated gasoline in his area.

The New York City metropolitan area, which includes much of Northern New Jersey, is required to implement an oxygenated gasoline program under section 211(m) of the Clean Air Act. Under section 211(m), all states with carbon monoxide (CO) nonattainment areas are required to implement winter oxygenated gasoline programs. Thirty-six areas across the country, including the New York City metropolitan area, implemented oxygenated gasoline programs beginning on November 1, 1992. Most of these cities are now beginning their third wintertime oxygenated gasoline seasons.

EPA has extensively documented the detrimental health effects of carbon monoxide. Carbon monoxide enters the bloodstream and reduces the delivery of oxygen to the body's organs and tissues. EPA studies show that carbon monoxide pollution may lead to loss of visual perception and alertness, dizziness, headaches and confusion. High levels of CO are particularly dangerous for elderly people, small children and people with asthma, pulmonary or cardiovascular diseases.

EPA has also carefully studied the effects of oxygenated gasoline on carbon monoxide pollution from motor vehicles and has estimated that oxygenated gasoline programs reduce highway emissions of carbon monoxide by 15-20%. In addition to reducing emissions of carbon monoxide, oxygenated gasoline also reduces the public's exposure to benzene. Oxygenated gasoline reduces CO

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and toxics emissions by more completely burning the fuel through the addition of extra oxygen. The continued sale of oxygenated gasoline in the New York City metropolitan area will help ensure that the area does not again violate the carbon monoxide air quality standard and will reduce the exposure of local citizens to toxic pollutants emitted through the tailpipes of motor vehicles.

Regarding Mr. Lichter's concern about the health risks associated with the use of oxygenates, since early 1993, EPA has led an intergovernmental and industry research program to determine the potential health effects which might result from the use of oxygenates. The Agency has worked with the Centers for Disease Control and Prevention (CDC), the Environmental and Occupational Safety and Health Institute in New Jersey and the petroleum industry to undertake additional research, which includes both vehicle emission tests and health studies, as well as the analysis of air and fuel samples. The Agency has dedicated well over \$1 million to this effort. The research to date indicates that the benefits of CO reduction far outweigh any potential health effects associated with the use of oxygenates.

Mr. Lichter has also requested information about the use of oxygenates and reduced fuel efficiency. Mileage losses are mainly due to other factors which occur each winter. Many research studies confirm that oxygenate addition as required by the program results in average changes in fuel economy of no change to about a two-percent loss. Other losses in miles per gallon are caused by any of the following factors:

- o In the winter months, refiners change their fuel blends by increasing the levels of butane in gasoline. The additional butane tends to lower the overall BTUs (British thermal units) available in the fuel and therefore lowers gas mileage;
- o More energy is required in the wintertime to start vehicles due to cold temperatures;
- o Cold-mode operation results in more fuel use;
- o Most drivers use their heaters in the winter;
- o Drivers who use chains will reduce fuel economy, as will drivers who do not use chains and experience tire slippage; and
- o Increased idling time in the winter may also decrease fuel economy if cars are left running (for example, in the morning to warm up).

The sum of these factors leads to an average 10% to 50% reduction in fuel economy in the winter. Some drivers may experience losses up to 50%, depending on vehicle maintenance and driving habits. Also, while some vehicles experience fuel economy losses, others which are operating in a too-fuel-rich mode often experience fuel economy increases. Finally, the CO reduction

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cited above is measured per mile driven, not per gallon of gasoline burned. Thus, any fuel economy loss is taken into consideration in the 15-20% reduction in CO.

Thank you for your interest in oxygenates and the potential impacts of their use in New Jersey. Please feel free to contact me or David J. Kortum, Acting Director, Field Operations and Support Division, at (202) 222-9022, if you have any further questions.

Sincerely yours,

Mary T. Smith, Acting Director
Office of Mobile Sources

cc: Region 2
OCLA/Frantz

PREPARED BY:M.MILLER:asa:6406J:233-9031:AL944773:10-21-94

Dear Mr. Sweeney:

This letter is a response to your October 24, 1994, letter requesting information about the Environmental Protection Agency's (EPA's) ongoing investigation into the potential health effects associated with the use of methyl tertiary butyl ether, or MTBE.

Section 211(m) of the Clean Air Act requires the country's most serious carbon monoxide (CO) nonattainment areas to implement oxygenated gasoline programs every winter, and MTBE is the most widely-used oxygenate additive. On November 1, 1992, the oxygenated gasoline program was required to start in 39 cities. Soon thereafter, citizens in Fairbanks, Alaska, began complaining of acute symptoms such as headaches, dizziness and nausea, which they attributed to the use of MTBE-oxygenated gasoline.

EPA's first step was to review the extensive health effects research already conducted on MTBE. Beginning in 1987 with the Toxics Substances Control Act (TSCA), EPA required that industry conduct long-term animal studies to address potential chronic health effects. EPA and industry also have conducted their own health effects and exposure research under TSCA.

Because the symptoms reported in Alaska were unexpected in light of the research already completed, EPA's second step was to develop a strategy to evaluate the potential health risks associated with MTBE use. EPA began planning and implementing a research effort into the effects of MTBE use in the fall of 1992, and in November of 1993, EPA's Office of Research and Development (ORD) published a report summarizing those studies. The report is called the "Assessment of Potential Health Risks of Gasoline Oxygenated with Methyl Tertiary Butyl Ether (MTBE)." This report addresses both short-term and long-term effects of MTBE. The major conclusions of EPA's research were:

- o There is unlikely to be a substantial risk of acute health symptoms among healthy members of the public receiving "typical" environmental exposures under temperate conditions. This leaves the question open about more subtle health risks, especially among susceptible populations. If acute symptoms are being caused by MTBE, they appear to be mild and transient.
- o Symptom reports in Fairbanks clearly decreased when MTBE oxyfuels were removed. However, the situation is confounded since the heightened public concern about the potential health effects, higher costs, and distinctive odor with MTBE oxyfuel use decreased when MTBE oxyfuels were removed. Even so, the unique meteorology and topography of Fairbanks prevents ruling out an association between MTBE oxyfuels and symptoms.

- o Animal studies have shown developmental effects from repeated exposures to high concentrations of MTBE. Human developmental risk cannot yet be defined quantitatively. However, based on the concept that a short-term exposure during a critical period of sensitivity can potentially cause a developmental effect, there is potential risk for developmental toxicity as human exposure exceeds 48 mg/m^3 , which would include some gasoline fill-up scenarios. Most public exposures are well below this concentration and are not of concern. MTBE is not unique among gasoline constituents in having developmental effects in laboratory animals.
- o Based on several studies of laboratory animals exposed chronically to MTBE and annual human exposure estimates, it does not appear that there is a significant risk for MTBE to cause chronic noncancer effects. The potential risk of noncancer health effects from chronic exposure to MTBE as part of a complex mixture with gasoline is not known.

The potential health effects of any gasoline fuel additive should be considered in proper context to avoid confusion. Given that an additive may have an identified health effect, that effect should be considered first in relation to the potential impact on the overall hazard of the gasoline to which it is added. Then it should be considered in relation to its overall impact on public health.

As mentioned above, gasoline itself (in unrelated research) has been found to cause carcinogenic effects in tests of laboratory animals. Also, in some of the animal tests performed under TSCA, MTBE has been found to be carcinogenic.

Based on its ongoing investigation of MTBE, EPA does not believe that adding MTBE to gasoline for the oxygenated gasoline program (15% MTBE, 85% gasoline) increases the carcinogenicity of the gasoline mixture. EPA is aware of ongoing MTBE studies in Italy, and has requested that the data be made available to us upon publication. EPA is committed to incorporating the best science in its programs, and will, of course, address results of new research when published.

Thank you for your interest in this matter. My staff will continue to communicate with EPA's Region II and the New York State Department of Environmental Conservation on this issue. If you have any further questions, please call Mary T. Smith of my staff at (202) 233-9000.

Sincerely,

11/10/94

ORD input to OMS for responding to newspaper articles:

The article xxx, asked for an explanation of why EPA is requiring methyl tertiary butyl ether (MTBE) be added to gasoline in yyy during the winter season if MTBE may be carcinogenic. I would like to provide EPA's response.

The Clean Air Act Amendments (CAAA) require that gasoline sold in the wintertime in areas where CO is a (qualification) problem be oxygenated. This involves adding a relatively small amount of an additive such as MTBE to the gasoline mixture to enhance combustion efficiency, and, thereby reduce carbon monoxide levels. CO, a colorless, odorless gas, is of concern because it can result in cardiovascular effects in people with chronic heart disease.

EPA's role is to administer the oxyfuel program, which is now in z areas of the U.S. Neither the CAAA nor EPA require that any specific compound be used as an oxygenate in any area.

The potential health effects of any gasoline fuel additive should be considered in proper context to avoid confusion. Given that an additive may have an identified health effect, that effect should be considered first in relation to the potential impact on the overall hazard of the gasoline to which it is added. Then it should be considered in relation to its overall impact on public health risk.

With regard to MTBE, EPA has ensured that extensive health effects research has been conducted. Beginning in 1987, under the Toxics Substances Control Act (TSCA), EPA has required that industry conduct long-term animal studies to address potential chronic health effects. EPA and industry also have conducted their own health effects and exposure research.

Gasoline itself (in unrelated research) has been found to cause carcinogenic effects in tests of laboratory animals. Also, in some animal tests, among those mentioned above, MTBE has been found to be carcinogenic.

Based on its ongoing investigation of MTBE, however, EPA does not believe that adding MTBE to gasoline for the oxygenated fuels program (i.e., 85 percent gasoline, 15 percent MTBE) increases the carcinogenicity of the gasoline mixture. EPA is aware of ongoing MTBE studies in Italy, and has requested that the data be made available to us upon publication. EPA is committed to incorporating the best science in its programs, and will, of course, address results of new research when published.

In the meantime, MTBE does appear to be effective in reducing CO and its attendant health risks, where they exist. (Discuss results of program to date.)



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

SEP 14 1994

OFFICE OF
AIR AND RADIATION

MEMORANDUM

SUBJECT: 1993-1994 Carbon Monoxide Exceedances - Wintertime
Oxygenated Gasoline Program

FROM: *M. Winstead McCall*
M. Winstead McCall, Environmental Protection
Specialist, Program Implementation Oversight Branch

TO: Al Mannato, Acting Chief
Program Implementation Oversight Branch

Attached is a report on exceedances of the carbon monoxide standard during the 1993-1994 monitoring period in those areas that participated in the wintertime oxygenated gasoline program.

The exceedances that occurred in the 8 pre-existing programs were as follows:

Denver	3
El Paso	4
Las Vegas	12
	--
	19

Exceedances that occurred in the 14 new, non-California programs were:

Northern N.J.	2 (N.J. is disputing)
Philadelphia	1
Baltimore	1
Provo, UT	3
Spokane	6
Portland/Vanc	1 (Vancouver claims this exceedance)
	--
	14

Total exceedances increased in the second year of the new, non-California programs by 21%. Overall, all program exceedances increased by about one-half. (See Attachment 1.)

Exceedances that occurred in the California areas are reported in Attachment 1. All California exceedances occurred in the Los Angeles area.

Since Alaska did not participate in the program, their exceedances are listed separately in Attachment 2.



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Attachment 3 shows all exceedances in the new, non-California areas (does not include pre-existing programs) from 1987 until the present.

Attachment 4 contains detailed charts by EPA regions of areas that participated in the program this past season.

Cleveland and Syracuse have been redesignated in attainment and did not conduct programs in 1993-1994. Greensboro, ~~Albuquerque~~, and Hartford are being redesignated, and will not participate in the upcoming 1994-1995 program.

Alesha created a new chart for Grants Pass, Oregon, since that chart was not, nor were the charts for California and Hartford, included in the computer disc given to me for this assignment. That is the reason data for Grants Pass is not complete.

A quick look at the data indicates that the most frequent occurrence of exceedance in the new programs was in the Northwest in November 1993. Since I have no experience in the wintertime oxygenated fuel programs, its nuances, or issues, I am unable to analyze or discuss the reasons why these exceedances occurred.

Please contact me if you have any questions regarding this report.

cc: ~~Marilyn~~ Marilyn Bennett, PIOB

ATTACHMENT 1

SUMMARY OF 1993-1994 CARBON MONOXIDE EXCEEDANCES
OF AREAS PARTICIPATING IN WINTERTIME OXYGENATED GASOLINE PROGRAM

No. Exceedances:

PRE-EXISTING PROGRAMS*

19

8 pre-existing programs

Comparison to last year:

From 11 in 1992-93 to 19 in 1993-94
(There were 8 programs in 1992-93)

NEW PROGRAMS**

14

14 new non-California programs

Comparison to last year:

From 3 in 1992-93 to 14 in 1993-94
(There were 21 new programs in 1992-93)

CALIFORNIA PROGRAMS***

24

9 California cities had programs
(All exceedances were in L.A.)

Comparison to last year:

From 15 in 1992-93 to 24 in 1993-94
(There were 8 programs in 1992-93)

1992-1993 TOTAL EXCEEDANCES:

29

1993-1994 TOTAL EXCEEDANCES:

57

*Albuquerque; Colorado Springs; Ft. Collins/Loveland; Las Vegas; El Paso; Denver/Boulder; Reno; Phoenix.

**Philadelphia; Baltimore; Washington, D.C.; Raleigh/Durham; Greensboro/Winston Salem; Minneapolis; Spokane; Seattle; Medford, OR; Klamath Co, OR; Grants Pass, OR; Portland/Vancouver; Provo; NY/NJ/CT CMSA.

***Los Angeles; San Diego; Chico; Fresno; San Francisco Bay Area; Modesto; Sacramento; Stockton; Lake Tahoe.

ATTACHMENT 21993-1994 CARBON MONOXIDE EXCEEDANCES
IN ALASKA*No. Exceedances:

FAIRBANKS

5

3 exceedances in Dec. 1993;
2 exceedances in Jan. 1994.

Comparison to last year:

From 2 in 1992-93 to 5

ANCHORAGE

4

4 exceedances in Dec. 1993.

Comparison to last year:

From 0 in 1992-93 to 4

*Alaska did not participate in 1993-1994 wintertime oxygenated gasoline program due to perceived health concerns on use of MTBE in gasoline.

1994-95 OXYGENATED GASOLINE AUDIT SCHEDULE AND STATUS
*** TENTATIVE ***

<u>City</u>	<u>Date</u>	<u>Status</u>	<u>Who?</u> *
El Paso	Nov. 28	Trying to line up Region's participation	MM, SA
Phoenix	Dec. 12		MB, SA
Spokane	Jan. 9		MM, SA
DC/Baltimore	Feb. 6/13		SA, MM, MB
Provo	Feb. 20		MB, MM
Minneapolis	Jan. 23		MM, MB
or Anchorage	Jan. 23		MM, MB

* First person is primary contact to arrange trip

FIELD OPERATIONS AND SUPPORT DIVISION
AS OF 7/94

<u>NAME</u>	<u>TELEPHONE</u>	<u>INTERCOM</u>
MARY T. SMITH	233-9311	21
FAITH WILLIAMS	233-9000	02
MINERVA THOMAS	233-9402	01
CASEY CACCAVARI	233-9302	13
CRYSTAL COOK	233-9012	31
JOAN SCRIVER	233-9413	09
JERRY FILL	233-9011	30
ERIC GRANT	233-9058	58

TECHNICAL ANALYSIS BRANCH

DAVID KORTUM	233-9022	34
ANGIE YOUNG	233-9038	53
HELEN SABLACK	233-9059	59
JIM CALDWELL	233-9303	14
ANNE-MARIE COONEY	233-9013	32
MARK CORYELL	233-9014	33
JOSEPH FERNANDES	233-9016	34
LARRY HASLETT	233-9728	
JOHN HOLLEY	233-9305	16
PETER LIDIAK	233-9026	43
ANDY LOWE	233-9027	44
MIKE MARMEN	233-9028	45
JOE SOPATA	233-9034	50
TRACY WORMACK	233-9037	52
DAVID CUPPETT	233-9755	
CYNTHIA BURKE	233-9008	29
JEFF COKAIN	233-9073	(CONTRACTOR)
DONALD MATTSON	233-9066	(CONTRACTOR)
PAUL BASTEK	233-	(CONTRACTOR)

PROGRAM IMPLEMENTATION OVERSIGHT BRANCH

AL MANNATO	233-9308	19
ALESHA AKERS	233-9020	00
MARY FLOYD	233-9404	03
MARILYN BENNETT	233-9006	27
STEVE ALBRINK	233-9003	24
PAUL ARGYROPOULOS	233-9004	25
MICK BALL	233-9005	26
PAT CHILDERS	233-9415	11
SHEENA DUPREE	233-9414	10
GEANETTA FIELDS	233-9017	35
WINSTEAD MCCALL	233-9029	46
MEREDITH MILLER	233-9031	47
WHITNEY TRU-CRANOR	233-9036	56

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